

REMARKSThe Specification

With respect to the Examiner's objection to the specification (see paragraph 2, page 2, of the Office Action), Applicants' note that the specification was updated to indicate parent priority information in Applicants' Preliminary Amendment filed on May 11, 2005. Accordingly, Applicants believe this objection is moot.

IDS

Applicants thank the Examiner for considering the references submitted in three of the four IDSs filed. Applicants respectfully request the Examiner's consideration of the reference cited in the IDS filed on dated June 5, 2007.

Claim Amendments

Claims 1-19 are pending. Claims 4, 5, 13-15, 17, and 19 are withdrawn from examination. Claims 1-3, 6-12, 16, and 18 are amended.

Claim 1 has been amended to specify an "isolated" DNA encoding a protein whose deletion of function causes an increase in the "glumous flowers, fruits, or seeds" of a plant. Claim 1 has been further amended to specify that the DNA (a) encodes a protein comprising the amino acid sequence of SEQ ID NO: 3, (b) consists of a coding region of the nucleotide sequence of SEQ ID NO: 1, (c) comprises a coding region comprising the nucleotide sequence of SEQ ID NO: 2, or (d) encodes a protein which has 95% identity to the amino acid sequence as set forth in SEQ ID NO: 3 and the deletion of function of the protein set forth in SEQ ID NO: 3 results in an increase in the glumous flowers, fruits, or seeds of a plant. Support for this amendment can be found throughout the application as originally filed, *e.g.*, at page 4, lines 4-17, and at page 8, lines 11-13.

Claim 2 has been amended to specify that the DNA is "isolated" from rice. Support for this amendment can be found throughout the application as originally filed, *e.g.*, at page 4, line 18, and at page 2, lines 18-22.

Claim 3, has been amended to specify an "isolated" DNA encoding an RNA "fully" complementary to a transcript of the DNA of claim 1. Support for this amendment can be found throughout the application as originally filed, *e.g.*, at page 4, line 19, and at page 10, lines 14-16.

Claims 6 and 12 have been amended to provide appropriate claim dependency.

Claims 7-11 have been amended to specify that the cell is “transformed” with the vector or to specify a “transformed” plant. Support for this amendment can be found throughout the application as originally filed, *e.g.*, at page 6, line 22.

Claim 16 has been amended to specify an “isolated” polynucleotide comprising at least 15 continuous nucleotides that are “fully” complementary to the nucleotide sequence of SEQ ID NO: 1 or 2, or a “fully” complementary sequence thereof. Support for this amendment can be found throughout the application as originally filed, *e.g.*, at page 4, line 19, and at page 10, lines 14-16.

Claim 12 has been further amended to delete the word “body” as suggested by the Examiner.

Claim 18 has been amended to specify that the agent is capable of “changing the number of glumous flowers, fruits, or seeds” of a plant. Support for this amendment can be found throughout the application as originally filed, *e.g.*, at page 2, line 18-22.

The foregoing claim amendments should in no way be construed as acquiescence to any of the Examiner’s rejections and were made solely to expedite prosecution of the application. Applicants reserve the right to pursue claims to the canceled subject matter, or any subject matter which they are entitled to claim, in this or a separate application. No new matter has been added. Further, the withdrawn method claims that depend from or otherwise include all the limitations of any allowable product claims which are deemed allowable should also be rejoined in accordance with the provisions of MPEP §821.04.

Rejection of Claim 11 Under 35 U.S.C. §101

Claim 11 is rejected as being directed to non-statutory subject matter. According to the Examiner, the productive material of the transformed plant includes a seed which is not transgenic, and reads on a product of nature. To expedite prosecution, claim 11 has been amended as suggested by the Examiner. Accordingly, this rejection is moot.

Rejection of Claims 1-3, 6-12, 16, and 18 Under 35 U.S.C. §112, Second Paragraph

Claims 1-3, 6-12, 16, and 18 are rejected as being indefinite. According to the Examiner, claims 1 and 2 are unclear based on the word “derived.” To expedite prosecution, the claims no longer include the word “derived.” Therefore, this rejection is moot.

The Examiner further objects to the phrase “particle-bearing number” (claims 1 and 18).

To expedite prosecution, the claims have been amended to delete the phrase “particle-bearing number.” Therefore, this rejection is moot.

Applicants submit that the foregoing amendment of claim 1 also addresses the Examiner objection to “stringent conditions.”

Claim 3 has been amended, as suggested by the Examiner, to insert “fully” before “complementary,”

Claims 7 and 8 have also been amended, as suggested by the Examiner, to replace “transfected” with “transformed.”

Claim 12 has been amended, as suggested by the Examiner, to delete the word “body.”
Based on the foregoing, the rejection of the claims as being indefinite is moot.

Rejection of Claims 1-3, 6-12, 16, and 18 Under 35 U.S.C. §112, First Paragraph

Claims 1-3, 6-12, 16, and 18 are rejected as not meeting the written description requirement. According to the Examiner, the claims reciting substitutions, deletions, additions, insertions, their combination thereof, and sequences which hybridize to SEQ ID NO: 1 lack adequate written description because Applicants fail to disclose a representative number of species as encompassed by these claims.

Applicants respectfully traverse this rejection. However, to expedite prosecution, the claims have been amended to further define the claimed molecules structurally and functionally. Accordingly, the claimed DNA includes (a) a DNA encoding a protein comprising the amino acid sequence of SEQ ID NO: 3; (b) a DNA consisting of a coding region of the nucleotide sequence of SEQ ID NO: 1; (c) a DNA comprising a coding region comprising the nucleotide sequence of SEQ ID NO: 2; or (d) a DNA encoding a protein which has 95% identity to the amino acid sequence as set forth in SEQ ID NO: 3 and the deletion of function of the protein set forth in SEQ ID NO: 3 results in an increase in the glumous flowers, fruits, or seeds of a plant.

Such molecules are fully described in the present specification. In particular, with respect to the DNA encoding a protein which has 95% identity to the amino acid sequence as set forth in SEQ ID NO: 3, Applicants respectfully direct the Examiner’s attention to Example 14 of the *Revised Interim Written Description Guidelines Training Materials* (published January 5, 2001; <http://www.uspto.gov/web/menu/written.pdf>), which provides that a claim directed to variants of a protein that are at least 95% identical to a particularly disclosed sequence and that have a particularly specified activity in combination with an accompanying specification that

discloses a single species falling within the claimed genus, satisfies the requirements of 35 U.S.C. §112, first paragraph, for written description. Therein, the Office concludes that “the genus of proteins that must be variants . . . does not have substantial variation since all the variants must possess the specific catalytic activity and must have at least 95% identity to the reference sequence.” The rationale behind the foregoing conclusion, as presented by the *Written Description Guidelines*, is that “[t]he single species disclosed is representative of the genus because all members have at least 95% structural identity with the reference compound and because of the presence of an assay which Applicant provides for identifying all of the at least 95% identical variants . . . which are capable of the specified catalytic activity.” Accordingly, one skilled in the art would conclude that applicant was in possession of the necessary common attributes possessed by the members of the genus (*i.e.*, the sample claim meets the written description requirement of 35 U.S.C. §112, first paragraph). See, Training Materials, pages 53-55.

The subject matter as defined in claim 1 is analogous to the claim of Example 14 in the Guidelines in that the claims of the instant application are directed to a DNA encoding a protein having at least 95% identity to a reference sequence, namely SEQ ID NO:3, and having a specifically identified activity, namely the increase in the glumous flowers, fruits, or seeds of a plant. As discussed above, since the species disclosed is representative of the claimed genus based, for example, on the defined structural and functional features, the claimed genus will not have substantial variation. Thus, it follows that since the genus is not widely variable, a single species (namely, SEQ ID NO:3) is sufficient to demonstrate possession. Furthermore, the instant specification sets forth methods for identifying all of the at least 95% identical variants of SEQ ID NO:3 which perform the claimed function.

Based at least on the foregoing, the present specification sufficiently describes the genus encompassed by claim 1 so as to convey with reasonable clarity to those skilled in the art that Applicants were in possession of the claimed invention.

Rejection of Claims 1-3, 6-12, 16, and 18 Under 35 U.S.C. §112, First Paragraph

Claims 1-3, 6-12, 16, and 18 are rejected as not being enabled. According to the Examiner, “[t]he breadth of the claims encompasses sequences which do not have 100% sequence identity to SEQ ID NO:1, 2, and 3. Moreover, since unlimited substitutions, deletions, additions, insertions, and their combinations thereof are recited in the claims, the claims more

broadly encompass any sequence whereby its deletion of function increases the particle-bearing number in a plant ...”

Applicants respectfully traverse this rejection. However, to expedite prosecution and as described above, claims have been amended to further define the claimed molecules structurally and functionally. Further, Applicants draw the Examiner’s attention the enablement decision tree set forth in the “Training Materials For Examining Patent Applications. With respect to 35 USC § 112, First Paragraph - Enablement Chemical/Biotechnical Applications” first asks the question: “Does the specification teach how to make and use at least one embodiment encompassed by the claims as a whole without undue experimentation?” A note to the question states that “if there is a working example, the answer to the question cannot be ‘NO’.” Herein, Applicants not only provide general guidance as to how to make and use embodiments of the claimed invention but also describe representative species that fall within the scope of the claimed invention (*i.e.*, SEQ ID NOs: 1-3). Accordingly, the answer to the first question is “YES”.

The second question in the enablement decision tree is: “Are the enabled embodiments representative of the full scope of the claim?” As discussed above, the USPTO itself has deemed a single disclosed species to be representative of the claimed genus of hybridizing homologs and sequence variants encompassed by the claims. Specifically, the high degree of sequence identity and/or the highly stringent hybridizing techniques required by the claims yields structurally similar nucleotides; therefore, a person of skill in the art would not expect substantial variation among species within the genus. Accordingly, as Applicants have disclosed a representative species (*i.e.*, SEQ ID NOs: 1-3), the answer to this second question is also “YES”.

Based on the foregoing guidelines, the claims are fully enabled and reconsideration/withdrawal of this rejected is respectfully requested.

Rejection of Claims 1-3, 6-12, 16, and 18 Under 35 U.S.C. §102(b)

Claims 1-3, 6-12, 16, and 18 are rejected as being anticipated by Houba-Herin *et al.* (1999) Plant J. 17(6):615-626. According to the Examiner:

Houba-Herin teaches a sequence encoding a cytokinin oxidase from maize which has 48% sequence similarity to SEQ ID NO: 3. Houba-Herin also teaches a vector, plant host cell, clone, plant containing said sequence, reproductive material (plant), and method for producing a transformed plant. With regard to

claim 2, since it is unclear what is retained in the “derived” sequence from rice, the claim would encompass the sequence of Houba-Herin. With regard to claim 16, since “complementary sequence” reads on a two-nucleotide sequence, it is also anticipated by Houba-Herin. The sequence of Houba-Herin would inherently be an agent for increasing the particle-bearing number of a plant.

Applicants respectfully traverse this rejection. However, to expedite prosecution, the claims have been amended to further define the claimed molecules structurally and functionally. In particular, the variants encompassed by the pending claims include DNA encoding a protein which has 95% identity to the amino acid sequence as set forth in SEQ ID NO: 3 and a specific function (*i.e.*, the deletion of function of the protein set forth in SEQ ID NO: 3 result in an increase in the glumous flowers, fruits, or seeds of a plant). Houba-Herin fails to teach or suggest the claimed invention.

Rejection of Claims 1-3, 6-12, 16, and 18 Under 35 U.S.C. §102(b)

Claims 1-3, 6-12, 16, and 18 are rejected as being anticipated by Morris (US 6,229,066).

According to the Examiner:

Morris teaches a cytokinin oxidase from maize, vector, plant host cell, plant, offspring, clone, reproductive material, method for producing a transformed plant, and a polynucleotide comprising 31 continuous nucleotides of SEQ ID NO: 2 ... With regard to claim 2, since it is unclear what is retained in the “derived” sequence from rice, the claim would encompass the sequence of Morris.

Applicants respectfully traverse this rejection. However, to expedite prosecution, the claims have been amended to further define the claimed molecules structurally and functionally. As described above, the variants encompassed by the pending claims include DNA encoding a protein which has 95% identity to the amino acid sequence as set forth in SEQ ID NO: 3 and a specific function (*i.e.*, the deletion of function of the protein set forth in SEQ ID NO: 3 result in an increase in the glumous flowers, fruits, or seeds of a plant). Morris fails to teach or suggest the claimed invention.

Rejection of Claims 1-3, 6-12, 16, and 18 Under 35 U.S.C. §102(b)

Claims 1-3, 6-12, 16, and 18 are rejected as being anticipated by Boukharov (US 2007/0020621). According to the Examiner:

Boukharov teaches a sequence of SEQ ID NO: 68122 which has 100% sequence identity to SEQ ID NO: 1. Boukharov also teaches that the sequence is obtained from rice, vector, plant host cell, plant, offspring, reproductive material, method for producing a transformed plant, and at least 15 continuous nucleotide of SEQ ID NO: 1.

The claims have been amended to specify the coding region of SEQ ID NO:1. Boukharov discloses the genome sequence which encompasses the nucleotide sequence having 100% identity to the polynucleotide of SEQ ID NO: 1. However, Boukharov fails to teach or suggest the coding region of this sequence. Accordingly, the claims are novel over Boukharov.

SUMMARY

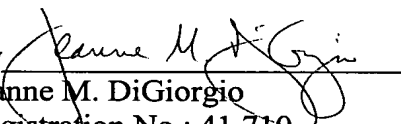
Applicants believe no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. SHZ-024US from which the undersigned is authorized to draw.

If the Examiner believes that a telephone conversation with Applicants' Attorney would be helpful in expediting prosecution of this application, the Examiner is invited to call the undersigned at (617) 227-7400.

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Respectfully submitted,

By


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